



# **Approach to new technologies of Information and Communication for Higher Education: the Cultural paradigm**

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## **1 New technologies for Education: what for?**



Reed Midem who created the MIPCOM, the MIP TV world fair in the field of Multimedia, has organized the first world education market in Vancouver (Canada) in May 2000. More than 56 countries were represented. It is thought that education business will approach 90 billions of US dollars in 2005. In North America as well as in Australia Higher Education is now considered as one of the most important business for the new century and a number of universities, either public or private, are very active in this field. These universities try to extend their business not only in their traditional territory but also in other continents. The industry is also coming into this business, not only because they need permanent education for their own employees but also because the job market now requires more skills than diploma. Who would have thought a few years ago that CISCO, Microsoft, General Electrics and other major brands would deliver their own education and diploma? Is education becoming a business as others? What will become of universities? The new technologies are causing a big turmoil and universities will not go through without trouble.

This new market is primarily aimed toward the "mobile student" thus requires the use of all means, which may permit to study from anywhere, from home, from work, from a hotel or an airport. . . In 2002 70% of all students enrolled in American Universities will be also engaged in professional life and Internet has been a tremendous boost in this direction. At this point one must be very careful about what education means. Most of the time industry means the learning of a technique or ways to appropriate new skills when academic professionals think about the learning of a basic knowledge or a culture. Recent studies presented at Tech Learn in Orlando (Florida) in November 2000 have shown that the efficiency of e learning is rather poor when aimed towards primary education. Studies presented at EDU-CAUSE, last October, confirm this point. There is not too much enthusiasm from students living on the campus to use the new technologies. They prefer the traditional system. Thus there is more motivation to use the new technologies for information and communication (NTIC) when the teaching is intended for professional skills than when it is intended for a personal development. The relationship between the industry and the academic world must be taken into account to understand the interest of the University in the use of e teaching.

At the same time a number of deciders and politicians are making optimistic predictions on the potential impact of the Internet to transform the Education process and to solve the economical aspects of the growing problem of mass education. Although education professionals agree with politicians on the potential impact of NTIC on Higher Education,



their objectives are not the same. Professors are looking at means to enhance the quality of their teaching, ways to change the attitude of the students toward education from a quite passive one to a more active one, tools to facilitate the personal work of their students. They are sharing the view that Internet may facilitate access to Higher Education but believe that there is still a place for traditional education on a campus with a direct contact between the instructors and the students. This difference of view is quite understandable. Politicians must answer to the demand of the citizens "more for less" and try by any means to enhance the productivity, which means for them, to spend the same amount of money for a more efficient teaching aimed towards a greater number of students. Teachers are submitted to this pressure. The influence of politicians on Higher Education depends on their influence on the local organization of the universities. This varies from one country to another according to the institutional organization of the universities. The academic world must answer at the same time to the demand of the students and to the politicians.

The development of NTIC, the motivations to use it and the pressure to change the old ways of teaching are thus depending upon a number of factors: the structural organization of Higher Education, the needs of the students and how it may influence the system, the relationship with the industry and its demand... It orientates the politics and the choice for the solutions.

The use of NTIC is far ahead in the American Higher Education institutions and there is a natural tendency in Europe to look at the American model and to follow it. The question that we want to address is the validity of this model for our countries and its limits. We are very well aware that it is a very political subject and our intention is not to judge the opportunity and the interest of changing the classical way of teaching in European Universities but just to address the question of the efficiency in copying a model which has been invented and developed in another country with a rather different cultural model and background.

## 2 The American model

The economical model of American universities is the for-profit enterprise. It does not mean that their main objective is to make money and to distribute the benefits to the owners, most do not, but the permanent objective of an active President is to find funds to pay for all the activities, teaching as well as research, finding partners willing to donate to the institution and trying to attract the best students. US universities are "market oriented". All universities, including State and non-profit universities must compete to find the funds necessary to maintain and develop their activities thus they must enlarge their basin of recruitment and enroll as many students as possible. Courses will be opened when the demand is large enough. They must react to their local environment and always must give the best image of themselves. Students are customers. The use of new technologies may help in making the difference with others institutions in the area to attract young people and donations from sponsors.

One must also have in mind the fact that the number of students already engaged in the professional life is very high in the US. It is expected that, in 2002, 70% of the students will be part time only. Classical students engaged in primary education will become a

minority. One of the reasons might be the fact that learning is very expensive and most students cannot afford to stay in the university for many years. These new students cannot be permanently on the campus and learning from distance or, more simply, being in touch with the teachers and having access to the documents, is very appreciated and becomes necessary.

The offer of technical courses on the Web aimed towards the industry and responding to its dramatic needs of permanent education for its staff will attract funds needed for the development of the Institution. Innovation, thus NTIC, gives the image of a dynamic institution and is a positive factor in this permanent competition. Answering to the demand of the customers is a question of survival for US universities and the use of NTIC may be justified for this reason only.

This for-profit model means that universities are organized as independent companies. The strategy is decided at the local level, which explains why the autonomy of US universities is much higher than the autonomy of their European counterpart. Diploma is granted locally which is quite confusing for us: a bachelor degree, for instance, in a European country, has approximately the same meaning in all universities. It is not the case in US universities where one finds, under the same label, a large variety of knowledge levels, varying from one university to another one and from one department to another. It also means that each institution is free to decide what a diploma means, how to deliver it and how to control the level of the students. This system works all right; employers understand this very well and know perfectly which are the best diplomas in their field. Dramatic changes such as the use of NTIC may be introduced without disturbing the system since there is no standardization for the diploma. Innovation thus NTIC is a plus since it allows attracting new categories of students and allows to the demand of all customers, industry as well as young people.

A good part of the funding, in US universities, comes from the students. The fees are very high, also in State universities, at a level, which seldom exists in Europe except in business schools and a few others. American universities have spent huge amounts of money for wiring the classrooms and the dormitories. Students have access to the network from everywhere, thus it is normal, in the US, to consider that the ownership of a microcomputer is mandatory. Teachers are required to put their courses, or at least documents, on the web. Part of the teachers only use it in an innovative way having written interactive courses and using the facilities for electronic classrooms and examinations. This would not exist if the basic infrastructure, network and personal computers, were not present.

Today American universities are introducing wireless classrooms. Students will be required to bring their own laptop. The university will not provide any machine in the library or in the classroom! However, it seems that the technique is running ahead, preceding the demand. Innovation is coming first and professors must now imagine the best ways to make the best use of it. American universities are innovation driven, not only for pedagogical reasons, but also because of their business model.

To summarize, the US attitude is that the use of NTIC is expected to be good: - to enhance the efficiency of teaching - to attract customers and to be able to respond to the demand of part time students - to give a good image of the institution and to find sponsors. It also

responds to the demand of politicians for a better mass education. It is expected that NTIC are a good part of the answer but there is no definitive answer to this question. It is quite a challenge. One must keep in mind the fact that the private companies engaged in the teaching business which are the most successful and which challenge conventional universities in the most demanded fields are using classical means, i.e. conventional teaching, home work and paper!

### 3 The European features

Does the American model apply to Europe?

The available funds are not of the same order of magnitude in Europe and universities cannot invest the same amount. Hopefully efficiency in teaching is not always simply linked to money: in the beginning of the eighties, the best US universities already started to invest in technology at levels which were unthinkable in Europe. 15 years later nobody makes reference to these projects such as Carnegie-Mellon and others. It does not mean that they failed but the success has certainly not been what was expected. Up to now no proof has been given that NTIC have been able to replace the classical approach. To quote Dr M. Zastrocky, VP for Education and Research from the Gartner Group, at the Olympics, in Sydney, swimmers were able to improve their performances because of a new pool and sophisticated swimming suits. But they had to train as hard as ever. Why should we think that technology might replace the personal training of the brain, i.e. the usual process of individual learning? This gives us some hope: NTIC may certainly improve education and we must hope, from the past experience, that we can, in Europe, achieve the same goals with less money. But this also means that we must do our best to be as efficient as possible, i.e. work together, develop common projects, and find what we have in common to establish common models to be used in all European countries.

What can we learn from the US experience?

Technology, not affordable today, will be tomorrow. Thus it is not the most critical part. However one must remain cautious about a direct transfer of US solutions. Education is a very long process and it takes years to see the results of a change. To estimate what we can learn from the American experience and what is transferable to Europe we must learn and understand the specificities of each European model in relationship with its culture. Europe is made of many different countries and cultures, however all European countries have a number of common points.

The university model, in Europe, is far from the American one. It is not business oriented: learning and teaching are under State control, either centrally controlled as in France or locally as in Germany. Delegation is given by the State to fulfill a mission. Thus the influence of the State through its funding and its demand is of the uttermost importance.

Diploma, courses are controlled by national agencies and a standardization is under way, at a European level, to permit exchange of students among different universities in different countries. Having a national mission to fulfill, means that the universities are submitted to a number of regulations and less reasons to compete. The freedom for initiative does not compare to the American one and quite often, when competition exists among universities;

it is initiated by the State. Innovation is not as critical as in America thus universities do not regard NTIC as a means to fight for their survival. Universities have a long and rich historical background. The best ones do not resent NTIC as a means to attract students. Their reputation, the quality of their teaching, the opened opportunities for the students who receive their diploma is sufficient to continue to attract the best students. Of course they are interested in NTIC but more as a plus than as a basic tool. Smaller universities, less known, may find new opportunities to establish their position, especially in the new developing field of permanent education.

Writing courses using new technologies is a hard job, which does not pay. Careers are based on research thus it does not pay to be innovative in teaching. This is also true in the US but a pressure exists, due to the organizational model, so that professors must use the web. All developments, in Europe, are based on a voluntary basis thus there is not too much reasons to push the best professors in this direction. Due to our organization and the amount of available funds Europe cannot be so much innovation oriented.

Most European Universities are not involved in permanent education at the same level than the American ones. One may have many different explanations: the level of fees is so high in the US, so that students cannot afford to stay in the university as long as their European fellows. Thus they come back later when already engaged in their professional life. It may be also that diploma earned during the life «pays more» and that the reputation of the university is less important as it has been said before. Nevertheless there is more motivation for e learning in the US. European universities do not resent too much its need and are not in a hurry to develop courses on the web. This is a very critical point. The demand for permanent education will rapidly become the driving force for changes. Following the American model people will need to renew their knowledge all along their professional life and will ask for knowledge skills, not for diploma. This is not yet very well accepted in Europe. The danger is that American universities will try to enlarge their basin of recruitment establishing outposts in Europe. They have already started in Eastern Asia, offering their courses in Singapore, Hong Kong, Korea... with outposts located in Australia. They are arriving in UK where there is no problem of language as well as in Eastern Europe where the Education system is in a big turmoil. Other European countries, such as France, Germany, Italy or Spain will only resist until US universities and enterprises are able to offer their courses in the native language. It already started for business schools where the American language is a natural requirement.

#### **4 A model for Europe?**

What can each of us learn from the experience of others in European countries? The scale of the support for IT is about of the same dimension everywhere thus it is of interest to share our failures as well as our successes because we all act with the same constraints. European experiences are more profitable than American ones. European countries share a number of common views about the social organization of the society. Although it is not the most advanced part in the organization of the European Community common strategies for the social organization of life and for education exist. This has some implication on the perception and the use of NTIC in all countries belonging (either today or in a near future) to the European Community.

Let us now think about what model means for Europe.

Differences in the national cultures mean differences in the approach for education. For instance German attitude towards technology is different from the French one. French Cartesian approach to science and humanities mean a rather skeptical attitude towards Information Systems and a much less enthusiastic approach to its use than in UK. Differences in the structure of the State mean differences in the structures of Higher Education. In Germany there exists an agency for each land and a number of decisions as well as the politics are made at this level. France is very centralized and the degrees of autonomy of each university, especially the financial rules to which the institution must obey, are quite strict. They are much more liberal in UK. Thus different organizations and rules mean different strategies and solutions. For instance it is not uncommon, in France, to unify a number of universities to develop together a common product: this has been done for management software with some success. In Sweden the Ladok did the same. It did not work in UK where universities have chosen individual solutions. On the contrary, individuality seems to have been a key factor in UK universities, to successfully develop e learning in a variety of fields and sell their products abroad. These examples show that the French, the Swedish model might be of interest to other countries for management software development, the UK one for the development of e learning.

The differences in the cultures are also visible in the way Information Systems services try to work together. Briefly speaking one sees more a tendency to work together, to establish formal or informal organizations to share their experience and establish common projects in the Northern part of Europe than in the South. This is clearly visible in the organization of EUNIS. Delegates in the General Assembly are nominated by national wide organizations for most Northern countries, by individual universities in the South. Having the opportunity to exchange information through EUNIS, this has encouraged the countries where such organizations did not exist to form one. Tomorrow this will certainly facilitate the communication inside these countries but also exchanges at a European level.

A more delicate field is to write common courses among universities. The way the same course is taught differs according to the national cultures. To illustrate this point I may give a personal example: I am teaching numerical mathematics to physicists at the level of the third year. My course is based on a very well known book, "Numerical Recipes, the Art of Scientific Computing » by Press and others. This book presents a practical approach avoiding long and sophisticated theoretical explanations. A number of my colleagues, although they use it in their research, are quite reluctant in using it for teaching. They prefer a more theoretical presentation. I am convinced that this course would better fit UK students than French ones who share their professor's attitude because they have been educated in France. Thus it is not obvious that a course written in a country would be well accepted in another. However attitudes will certainly change in the future since students will more and more travel to other universities. All European universities would benefit if the European Community would just pay to translate courses from one language to another and the catalogue that each of us would be able to offer to his students would be greatly enriched.

Despite its diversity, Europe is a real community and common attitudes and models are shared among the different countries. Universities are mostly funded by the State, ei-

ther locally or nationally. Exchanges among universities, researchers as well as students, are growing rapidly. Network associations exist at a European level. Brussel encourages changes. Despite the diversity of cultures, organizations and approaches, one always finds countries with common attitudes for a given problem.

We all have the same challenge: to do as well as the US with much less funds. Thus we must work together to solve this challenge. There is an urgent need for common actions at the level of Information systems centers.

## 5 Conclusion: hope for a near future

To answer to the demand, we need new methods of teaching. Our universities exist since many centuries and continue to be proud of their traditions. IT strongly battles the traditional attitude. The traditional model, valid in a number of European countries, of plenary main lectures given by full professors, applications lectures given by the juniors, is strongly in danger. The traditional model of teaching has never been thought nor for mass education nor for permanent education.

We need new methods of learning. The student's attitude changes. In Latin countries, and also in many northern countries, the attitude of students is quite passive. They are waiting for the « good word » from the teacher. It is very different from the « aggressive attitude » of American students. The old way of learning does not match the new technologies, which demand an active attitude.

The traditional university is in danger. If we are not able to answer to the demand, private industry as well as American universities will come in the field. This is not only bad for us but also for our culture. We must work together to solve this challenge. New attitudes mean intensive use of new technologies for information and communication and large investment in this field, but also the cooperation of everybody, students and professors to make it successful.

Do we have the desire of such cooperation and the required enthusiasm?

There is an urgent need for common actions at the level of Information systems centers.

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